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(54) JUDGING SHEET FOR WETNESS WITH WATER

(57)Abstract:
PURPOSE: To provide a water-wetness judging sheet, which is not discolored in water wetness in small degree, is discolored with the water intrusion into the inside of a product and prevents the fading after drying, by laminating a lipophilic resin layer, wherein water soluble basic or acidic powder agent is dispersed and mixed in a base-material sheet, and hydrophilic resin layer, wherein water-soluble or alcohol-soluble acid-indicator is mixed.
CONSTITUTION: On a base-material sheet 1, a lipophilic first resin layer 2, wherein water-soluble basic powder agent 2b is dispersed mixed in lipophilic synthetic resin 2a, and a hydrophilic second resin layer 3, wherein water-soluble or alcohol-soluble acid-base indicator 3b is mixed into hydrophilic synthetic resin 3a thereon, are provided. The resin layer 3 is the layer, wherein the water- or alcohol-soluble acid-base indicator 3b, which is discolored in the basic region, is mixed into the resin 3a. The water-wetting judging sheet is not discolored at the light dew-condensation degree, which naturally occurs in the inside of a product caused by the change and the like of the humidity and the temperature of outside air. Even if the sheet is dried, the trace of discolored can be maintained.

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CLAIMS

[Claim(s)]
[Claim 1] The water wetting judging sheet characterized by carrying out the laminating of the 1st resin layer 2 of the lipophilic property which carried out distributed mixture of basic powdered material water-soluble to the synthetic resin of lipophilic property or/, and the water-soluble acid powdered material, and the 2nd resin layer 3 of the hydrophilic property which mixed the acid-base indicator of water solubility or alcoholic fusibility to the synthetic resin of a hydrophilic property on the base-material sheet 1 at order.
[Claim 2] The water wetting judging sheet according to claim 1 with which laminating formation of the 2nd resin layer 3 of the aforementioned hydrophilic property is suitably carried out on the 1st resin layer 2 of the aforementioned lipophilic property as patterns, such as a handle, a character, and a sign.
[Claim 3] The water wetting judging sheet according to claim 1 or 2 with which water-soluble acid powdered material or water-soluble basic powdered material is added by the 2nd resin layer 3 of the aforementioned hydrophilic property.
[Claim 4] The water wetting judging sheet according to claim 1 to 3 with which the laminating of the surface-protection layer 4 with a transparent hydrophilic property is carried out on the 2nd resin layer 3 of the aforementioned hydrophilic property.
[Claim 5] The water wetting judging sheet according to claim 1 to 4 whose synthetic resin of the aforementioned hydrophilic property the synthetic resin of the aforementioned lipophilic property is chlorination polypropylene, and is an ethyl cellulose.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention is stuck on the interior, such as an electric product used in the open air, and relates to the water wetting judging sheet used in order to judge whether there is any career that this electric product etc. sank.
[0002]
[Description of the Prior Art] Electric products, such as radio, a video camera, a pocket bell, and portable telephone, etc. are used in many cases in the open air, and since the danger that will get wet to rain or water will be poured is high, a certain amount of water resistance and waterproofness are taken into consideration.
[0003] However, a user drops these electric products to a puddle accidentally, and it soaks in water, and the circuit inside the product etc. gets wet in water, and it breaks down, or is set as the object of the charged repair as a thing which the function as an electric product may be spoiled, in such a case is depended on a user's, i.e., a general consumer, inattention. However, the objective judgment of whether to be what usually produced spontaneously whether it was what the cause of failure depends on submersion by negligence etc. in the range of use may be difficult.
[0004] Then, water wetting judging sheets, such as a label which applied and formed the hydrophobic synthetic coating material (or ink) which carried out distributed mixture of a water-soluble powder basicity agent or the powder acidity agent, including an acid-base indicator in base-material sheets, such as paper, a nonwoven fabric, or a resin film When it stuck on the interior of products, such as an electric product, beforehand, and water infiltrates into the interior of the product by submersion or water wetting and this product causes failure The water which infiltrated into the interior of this product carries out adhesion osmosis at a water wetting judging

sheet, the acid-base indicator contained in the solution and the aforementioned paint of the aforementioned water-soluble powder basicity agent distributed inside the paint of this sheet or a powder acidity agent causes color reaction, a paint discolors or a blot occurs.
[0005] By checking the existence of this submersion, discoloration by water wetting, or generating of a blot with a water wetting judging sheet, it had judged objective whether it was what the cause of failure depends on water wetting.
[0006]
[Problem(s) to be Solved by the Invention] However, distributed mixture of a powder basicity agent with the above-mentioned conventional water wetting judging sheet only water-soluble [including an acid-base indicator] on a base-material sheet or the powder acidity agent is carried out. Compatibility with water applies the synthetic coating material (or ink) of the low hydrophobic property of the permeability (absorptivity) of water low, and the water wetting judging sheet using such hydrophobic synthetic coating material produces neither discoloration nor a blot easily in the adhesion grade of few quantity of water.
[0007] Moreover, the case where an electric product etc. produces an electric short circuit and causes failure even if few quantity of water infiltrates into the interior of the product is a certain thing plentifully.
[0008] The submersion state duration or water wetting duration of a product, such as an electric product, for for example, comparatively short reasons If it is in the conventional water wetting judging sheet when only few quantity of water adheres to the water wetting judging sheet which only few quantity of water infiltrated into the interior of this product, therefore has been arranged inside a product, since discoloration or blot generating of the paint are not remarkable, It was difficult to judge that it is what a cause depends on water wetting though failure arises for a product by permeation of actually slight water.
[0009] Moreover, although it could make it clear in the case of the water wetting judging sheet using colors (coloring agent), such as a cobalt system or an amine system, to have discolored and to have sunk by water wetting, after the judgment sheet had got dry, the trace of discoloration was extinguished, it returned to the original state, and there was a problem of distinction becoming impossible.
[0010] In slight water wetting grades, such as spontaneous dew condensation by the climatic change, temperature-and-humidity change of the open air, etc., this invention is the water wetting judging sheet it was made to produce discoloration, when it does not discolor, but water infiltrates into the interior of a product by water wetting of a product, submersion, etc. and water wetting is carried out, and it is to enable it to maintain the discoloration state after sheet dryness.
[0011]
[Means for Solving the Problem] this invention is a water wetting judging sheet characterized by carrying out the laminating of the 1st resin layer 2 of the lipophilic property which carried out distributed mixture of basic powdered material water-soluble to the synthetic resin of lipophilic property or/, and the water-soluble acid powdered material, and the 2nd resin layer 3 of the hydrophilic property which mixed the acid-base indicator of water solubility or alcoholic fusibility to the synthetic resin of a hydrophilic property on the base-material sheet 1 at order.
[0012]
[Example] If the water wetting judging sheet of this invention is explained in detail below according to the example of drawing 1 (a) - (b) As shown in one example of drawing 1 (a), products made of paper, such as paper of fine quality, an art paper, or coat paper, Or the 1st resin layer 2 of the lipophilic property which carried out distributed mixture of the basic powdered-material 2b water-soluble to synthetic-resin 2a of lipophilic property is formed suitably partially extensively on the product made of synthetic resin, metal, or the base-material sheet 1 made from the composite which compounded either among these.

[0013] The 1st resin layer 2 of the aforementioned lipophilic property carries out distributed mixture of the basic powdered-material 2b of a hydrophilic property into this vehicle by making synthetic-resin 2a of lipophilic property into a vehicle.
[0014] On the 1st resin layer 2 of the lipophilic property which carried out distributed mixture of the above-mentioned basic powdered-material 2b, the 2nd resin layer 3 of the hydrophilic property which mixed acid-base indicator 3b of fusibility at water or alcohol (methyl alcohol, ethyl alcohol, propyl alcohol) is formed extensively at synthetic-resin 3a of a hydrophilic property.
[0015] as other examples shown in drawing 1 (b) -- the aforementioned 1st resin layer 2 top -- the 2nd resin layer 3 of a hydrophilic property -- being partial (the shape of a pattern, such as a pattern, a character, and a sign) -- it prepares
[0016] The 2nd resin layer 3 of this hydrophilic property mixes acid-base indicator 3b of the water discolored from colored colorlessness or colored, or alcoholic fusibility from discoloration (coloration) or colored from colorlessness to colored in a basic field to synthetic-resin 3a of a hydrophilic property.
[0017] Moreover, as shown in one example and other examples of drawing 1 (a) and (b), in order not to influence this 2nd resin layer 3 of humidity directly in this invention on the 2nd resin layer 3 of the hydrophilic property which mixed the above-mentioned indicator Or since it is polluted by neither **** nor external dust, it is possible for the surface-protection layer 4 of a transparent hydrophilic property to be formed if needed, and to prepare a sensible-heat adhesives layer, a pressure sensitive adhesive layer (or binder layer which carried out temporary attachment of the release paper), etc. in base-material sheet 1 rear face, and to use it as a seal, a label, etc.
[0018] Moreover, in this invention, although especially the color tone (surface color) of the aforementioned base-material sheet 1 is not limited, pure white is suitable for it.
[0019] As shown in drawing 1 (a) and (b), as synthetic-resin 2a of the lipophilic property which constitutes the 1st resin layer 2 of the aforementioned lipophilic property A saturated-polyester resin (polyethylene terephthalate), an unsaturated polyester resin, A polyvinyl chloride, a vinyl chloride vinyl acetate copolymer, polystyrene resin, The proper synthetic resin of non-water solubility, such as a polyethylene resin, polypropylene resin, and acrylic resin (polymethylmethacrylate), can be used. Especially, the elastomer system synthetic resin of elasticity systems, such as elasticity denaturation polymer (polymer denaturation-ized to elasticity), is suitable, and there are the following as elastomer synthetic resin constituted by the hard segment used as a subject, and the soft segment which gives ERASU tick nature.
[0020] For example, chlorination polymer system elastomers, such as a chlorinated polyethylene which uses chlorination polymer, such as a chlorination polyolefine, as a soft segment, and chlorination polypropylene, or a polystyrene system elastomer, a polyolefine system elastomer, a polyester system elastomer, a polyamide system elastomer, a polyurethane system elastomer, a fluorine system elastomer, an ion bridge formation system elastomer, etc. can be used.
[0021] Moreover, it is possible to use only the soft segments (for example, a chlorinated polyethylene, chlorination polypropylene or a polyisoprene, a polybutadiene, a saturated type polybutadiene, polyester, a polyether, an amorphous polyvinyl chloride, amorphous polyethylene, an ethylene propylene rubber, fluorine system rubber, etc.) which constitute the above-mentioned elastomer synthetic resin as elasticity denaturation polymer used as synthetic-resin 2a of the above-mentioned lipophilic property.
[0022] Moreover, a sodium carbonate, a sodium bicarbonate, potassium carbonate, a calcium carbonate, etc. can be used as water-soluble basic powdered-material 2b (powder alkali chemicals) which carries out distributed mixture into synthetic-resin 2a of the lipophilic property which constitutes the 1st resin layer 2 of the aforementioned lipophilic property.
[0023] Moreover, a boric acid, a selenic acid, the iodic acid, oxalic acid, a citric acid, an amber

acid, a tartaric acid, etc. can be used as water-soluble acid powdered-material 2b which carries out distributed mixture into synthetic-resin 2a of the lipophilic property which constitutes the 1st resin layer 2 of the aforementioned lipophilic property.

[0024] Next, rosin, such as a methyl cellulose, an ethyl cellulose, and polyvinyl alcohol, or a shellac can use the synthetic resin of the hydrophilic property of a gelatin system as synthetic-resin 3a of the hydrophilic property which constitutes the 2nd resin layer 3 of the hydrophilic property which mixed the aforementioned acid-base indicator 3b.

[0025] Moreover, as acid-base indicator 3b mixed into synthetic-resin 3a of the hydrophilic property which constitutes the 2nd resin layer 3 of the aforementioned hydrophilic property, the various well-known acid-base indicators of fusibility can be used for water or a lower alcohol (methyl alcohol, ethyl alcohol, propyl alcohol), for example, methyl yellow, a Methyl Orange, an ethyl orange, alizarin yellow, a thymol blue, cresol green, a cresol red, a Methyl Red, a phenolphthalein, etc. can be used as an acid-base indicator of water solubility or lower-alcohol fusibility.

[0026] The optimal solvent about various acid-base indicators and the indicator of those, the discoloration pH range, and a discoloration color tone are shown in the following table 1.

[0027]
[Table 1]

酸塩基指示薬	溶　　剤	変色ｐＨ範囲	色　　調
チモールブルー	水	1.2←→ 2.8	赤←→黄
メチルエロー	90%アルコール	2.9←→ 4.0	赤←→黄
メチルオレンジ	水	3.1←→ 4.4	赤←→黄
ブロモクレゾール グリーン	水	3.8←→ 5.4	黄←→青
メチルレッド	水	4.2←→ 6.3	赤←→黄
ブロモクレゾール パープル	水	5.2←→ 6.8	黄←→紫
リトマス色素	水	5.0←→ 8.0	赤←→青
ブロモチモールブルー	水	6.0←→ 7.6	黄←→青
フェノールレッド	水	6.8←→ 8.4	黄←→赤
クレゾールレッド	水	7.2←→ 8.8	黄←→赤
チモールブルー	水	8.0←→ 9.6	黄←→青
フェノールフタレイン	90%アルコール	8.3←→10.0	無色←→赤
アリザリンエロー	水	10.1←→12.0	黄←→ライラック

[0028] A setup of each discoloration pH range which is adapted for each above-mentioned acid-base indicator 3b Into the 1st resin layer 2 of lipophilic property, or the 2nd resin layer 3 of a hydrophilic property, pH range can be set up by adding a proper quantity of the respectively water-soluble acid agent or the basic agent corresponding to the amount of basic powdered-material or acid powdered-material 2a. As an acid agent, it is a boric acid, a selenic acid, the iodic acid, oxalic acid, a citric acid, an amber acid, a tartaric acid, a fatty acid, etc., and they are a

sodium carbonate, a sodium bicarbonate, potassium carbonate, a calcium carbonate, etc. as a basic agent.

[0029] In addition, it sets on the water wetting judging sheet of this invention. As the above-mentioned surface-protection layer 4 prepared if needed [that it is shown in drawing 1 (a) and (b)] The synthetic resin (an ethyl cellulose, polyvinyl alcohol, etc.) of a transparent hydrophilic property, OP varnish (the natural varnish for overprint or the synthetic varnish usually used) can be used. as the varnish or the synthetic varnish of a natural linseed-oil system The synthetic varnish for the overprint of rosin, a shellac, a methyl cellulose, an ethyl cellulose, and a nitrocellulose system can be used.

[0030] moreover, the water wetting judging sheet of this invention -- setting -- the [the 1st resin layer 2 of the above-mentioned lipophilic property, or] -- since any two or more layers in 2 resin layers 3, the above-mentioned surface-protection layer 4, or these each class are formed in a light color tone, it is possible to carry out optimum dose addition of the **** (Lake Red C, a Diarylide Yellow, a Phthalocyanine Green, a copper phthalocyanine blue, dioxazine violet, carbon black, titanium white, etc.), such as a pigment used for printing ink, if needed

[0031] Next, the concrete example of the water wetting judging sheet of this invention is shown below.

<Example 1> The following prescription Sodium carbonate (powder) 10 weight sections Chlorination polypropylene resin 10 weight sections Oily solvent (toluene) The comparatively transparent ink which carried out distributed mixture of the basic powdered material for forming the 1st resin layer of the lipophilic property which kneaded by 20 weight sections using the ball mill, without making water intervene, and carried out distributed mixture of the basic agent was created.

[0032]

Then, the following prescription Ethyl cellulose 10 weight sections Phenol Red (acid-base indicator) 1 weight section Alcohol (methanol) The ink of the hydrophilic property which mixed the indicator for forming the 2nd resin layer of the hydrophilic property which kneaded using the ball mill and mixed the indicator by 70 weight sections was created.

[0033] Next, applied completely the ink for forming the 1st resin layer of the lipophilic property which carried out distributed mixture of the above-mentioned basic agent on the base-material sheet of a snow-white roll sheet (64g of paper of fine quality/, m2, or art-paper 84.9 g/m2) in the gravure coating machine, and made the amount of (toluene) oily solvent vaporize, it was made to dry, and the 1st resin layer (stratum lucidum) of the lipophilic property which carried out distributed mixture of the basic agent was formed.

[0034] Then, on the 1st resin layer of the above-mentioned lipophilic property, applied to the whole surface the ink of the hydrophilic property which mixed the above-mentioned indicator in the gravure coating machine, and vaporized alcohol, it was made to dry, and the 2nd resin layer of the hydrophilic property which mixed the indicator was formed.

[0035] On the 2nd resin layer of the hydrophilic property which mixed the above-mentioned indicator if needed after that, water or alcohol was used as the solvent, or the ethyl cellulose which uses alcoholic mixed liquor as a solvent was applied, the surface-protection layer was formed, and the surface standard color obtained the water wetting judging sheet of yellow or light yellow.

[0036] <Example 2> The following prescription Sodium carbonate (powder) 10 weight sections Chlorination polypropylene resin 10 weight sections Oily solvent (toluene) By 20 weight sections, it kneaded using the ball mill, without making water intervene, and the ink which carried out distributed mixture of the basic agent for forming the 1st resin layer of the lipophilic property which carried out distributed mixture of the basic agent was created.

[0037]

Then, the following prescription Ethyl cellulose 10 weight sections Phenol Red (acid-base indicator) 1 weight section Alcohol (methanol) 70 weight sections **** for blue coloring (copper phthalocyanine blue) The ink (blue) of the hydrophilic property which mixed the indicator for forming the 2nd resin layer of the hydrophilic property which kneaded using the ball mill and mixed the indicator by 1 weight section was created.

[0038] Next, on the base-material sheet of a snow-white roll sheet (paper-of-fine-quality 64 g/m2 or 84.9g of art papers/, and m2), applied to the whole surface the ink of the lipophilic property which carried out distributed mixture of the above-mentioned basic agent in the gravure coating machine, and made the amount of (toluene) oily solvent vaporize, it was made to dry, and the 1st resin layer of the lipophilic property which carried out distributed mixture of the basic agent was formed.

[0039] Then, on the 1st resin layer of the above-mentioned lipophilic property, applied to the whole surface the ink of the hydrophilic property which mixed the above-mentioned indicator in the gravure coating machine, and vaporized alcohol, it was made to dry, and the 2nd resin layer of the hydrophilic property which mixed the indicator colored blue was formed.

[0040] On the 2nd resin layer of the hydrophilic property which mixed the above-mentioned indicator if needed after that, alcohol was used as the solvent, or the ethyl cellulose which uses alcoholic mixed liquor as a solvent was applied to the whole surface, the surface-protection layer was formed, and the surface standard color obtained the water wetting judging sheet of blue or light blue.

[0041] The surface standard color obtained the water wetting judging sheet of yellow or light yellow like the example 1 except having formed the 2nd resin layer in the <example 3> above-mentioned example 1 in the shape of a pattern pattern by the gravure method.

[0042] The above-mentioned water wetting judging sheet obtained in the above-mentioned example 1 - the example 3 Thermal resistance [in / 70 degree-Cx 48 hours / the discoloration by temperature, humidity, etc. is not seen under the usual environment, and], And when the moisture resistance in 40 degree-Cx90%RH(relative humidity) x 48 hours is good and makes water adhere to a water wetting judging sheet The acid-base indicator (Phenol Red) mixed into the synthetic resin of the hydrophilic property of the 2nd resin layer dissolves. It permeates in the synthetic resin in which the 1st resin layer of the lower layer lipophilic property carried out elasticity denaturation. The surface section colored slightly the 1st resin layer (stratum lucidum) of the lipophilic property which dissolves the water-soluble basic powdered material (sodium carbonate) which carries out distributed mixture, reacts into this synthetic resin, and colors the 2nd resin layer blue shell red, and is in the lower layer the grade which can be seen at red.

[0043] Thus, the aforementioned 2nd resin layer is dissolved with the water made to adhere simultaneously, becoming blue shell red. It fluidized presenting a flow state on the 1st resin layer of the lipophilic property in the lower layer, and the 2nd resin layer of this hydrophilic property carried out fluidization ablation in [top / 1st resin layer / of lipophilic property] irregular, the 1st resin layer (stratum lucidum) front face exposed it, and the color tone (white of a snow-white roll sheet) of the base-material sheet in the lower layer appeared.

[0044] In addition, it is paper-of-fine-quality 64 g/m2 as a snow-white roll sheet used as a base-material sheet. It is art-paper 84.9 g/m2 rather than it uses. It has become clear that to use is [moisture resistance] better.

[0045] The test result of the water wetting judging sheet obtained in the above-mentioned example 1 is shown in the following table 2. (In addition, an immersion test is based on being immersed for tap water 0.5 seconds.)

[0046]
[Table 2]
水濡れ判定シート試験結果（試験前の判定シート表面色（黄色））

試験項目		判定シート表面変色状態
環境試験	ヒートショック	変色無し（黄色）
	結露	変色無し（黄色）
	耐熱	変色無し（黄色）
	耐湿	変色無し（黄色）
浸漬試験	浸漬	赤色に変色し、その後、第２樹脂層が流動化剥離して、基材シート色の白色に変色
	乾燥経時状態	基材シート色状態を保持

・水濡れ判定シートの変色状態の判定；目視検査。
・環境試験項目
ヒートショック；＋６０℃×６０分と－２０℃×６０分との間で、加熱と冷却を３サイクル繰り返す。
結露；－１０℃×１８０分の冷却状態から、温度２５℃．湿度６５％ＲＨの雰囲気に放置して結露させた。
耐熱；７０℃×２８８０分
耐湿；温度４０℃，湿度９０％ＲＨ雰囲気に２８８０分放置した。
浸漬；ＡＢＳ樹脂製の平板に水濡れ判定シートを添付し、水道水に０．５秒間浸漬した。
乾燥経時状態；浸漬後即取り出して垂直に立て、自然乾燥した後の経時状態。

[0047] The test result of the water wetting judging sheet obtained in the above-mentioned example 1 is shown in the following table 3. (In addition, an immersion test is based on being immersed for tap water 60 seconds.)

[0048]
[Table 3]
水濡れ判定シート試験結果（試験前の判定シート表面色（黄色））

試験項目		判定シート表面変色状態
環境試験	ヒートショック	変色無し（黄色）
	結露	変色無し（黄色）
	耐熱	変色無し（黄色）
	耐湿	変色無し（黄色）
浸漬試験	浸漬	赤色に変色し、その後、第２樹脂層が流動化剥離して、基材シート色の白色に変色
	乾燥経時状態	基材シート色状態を保持

・水濡れ判定シートの変色状態の判定；目視検査。
・環境試験項目
ヒートショック；＋６０℃×６０分と－２０℃×６０分との間で、加熱と冷却を３サイクル繰り返す。
結露；－１０℃×１８０分の冷却状態から、温度２５℃，湿度６５％ＲＨの雰囲気に放置して結露させた。
耐熱；７０℃×２８８０分
耐湿；温度４０℃，湿度９０％ＲＨ雰囲気に２８８０分放置した。
浸漬；ＡＢＳ樹脂製の平板に水濡れ判定シートを添付し、水道水に６０秒間浸漬した。
乾燥経時状態；浸漬後即取り出して垂直に立て、自然乾燥した後の経時状態。

[0049] The test result of the water wetting judging sheet obtained in the above-mentioned example 2 is shown in the following table 4. (In addition, an immersion test is based on being immersed for tap water 0.5 seconds.)

[0050]
[Table 4]
水濡れ判定シート試験結果（試験前の判定シート表面色（青色））

試験項目		判定シート表面変色状態
環境試験	ヒートショック	変色無し（青色）
	結露	変色無し（青色）
	耐熱	変色無し（青色）
	耐湿	変色無し（青色）
浸漬試験	浸漬	赤色に変色し、その後、第２樹脂層が流動化剥離して、基材シート色の白色に変色
	乾燥経時状態	基材シート色状態を保持

・水濡れ判定シートの変色状態の判定；目視検査。
・環境試験
ヒートショック；＋６０℃×６０分と－２０℃×６０分との間で、加熱と冷却を３サイクル繰り返す。
結露；－１０℃×１８０分の冷却状態から、温度２５℃，湿度６５％ＲＨの雰囲気に放置して結露させた。
耐熱；７０℃×２８８０分
耐湿；温度４０℃，湿度９０％ＲＨの雰囲気に２８８０分放置した。
浸漬；ＡＢＳ樹脂製の平板に水濡れ判定シートを添付し、水道水に０．５秒間浸漬した。
乾燥経時状態；浸漬後即取り出して垂直に立て、自然乾燥した後の経時状態。

[0051] The test result of the water wetting judging sheet obtained in the above-mentioned example 3 is shown in the following table 5. (In addition, an immersion test is based on being immersed for tap water 0.5 seconds.)

[0052]
[Table 5]
水濡れ判定シート試験結果（試験前の判定シート表面色（黄色））

試験項目		判定シート表面変色状態
環境試験	ヒートショック	変色無し（黄色）
	結露	変色無し（黄色）
	耐熱	変色無し（黄色）
	耐湿	変色無し（黄色）
浸漬試験	浸漬	赤色に変色し、その後、第２樹脂層が流動化剥離して、基材シート色の白色に変色
	乾燥経時状態	基材シート色状態を保持

・水濡れ判定シートの変色状態の判定；目視検査。
・環境試験項目
ヒートショック；＋６０℃×６０分と－２０℃×６０分との間で、加熱と冷却を３サイクル繰り返す。
結露；－１０℃×１８０分の冷却状態から、温度２５℃，湿度６５％ＲＨの雰囲気に放置して結露させた。
耐熱；７０℃×２８８０分
耐湿；温度４０℃，湿度９０％ＲＨ雰囲気に２８８０分放置した。
浸漬；ＡＢＳ樹脂製の平板に水濡れ判定シートを添付し、水道水に０．５秒間浸漬した。
乾燥経時状態；浸漬後即取り出して垂直に立て、自然乾燥した後の経時状態。

[0053]
[Function] The water wetting judging sheet of this invention forms the 1st resin layer 2 of the lipophilic property which carried out distributed mixture of the vehicle and the powder basicity agent of a hydrophilic property which make the synthetic resin of lipophilic property a subject on the base-material sheet 1. The 2nd resin layer 3 of the hydrophilic property which mixed the synthetic resin of a hydrophilic property and the acid-base indicator of a hydrophilic property is formed on the 1st resin layer 2 of the lipophilic property which carried out distributed mixture of this basic agent. Since especially the 1st resin layer 2 of lipophilic property is using the polymer of lipophilic property, it is equipped with the property in which water does not permeate but water permeates in the 1st resin layer of lipophilic property for the first time by adhesion of

waterdrop, in the 1st resin layer of lipophilic property by the dew condensation grade.
[0054] If water adheres to the above-mentioned water wetting judging sheet, the acid-base indicator first contained in the surface 2nd resin layer 3 and its interior will dissolve in water. When this indicator permeates in synthetic resin, such as polymer which the 1st resin layer 2 of the lower layer aforementioned lipophilic property formed into elasticity denaturation, the basic agent of the hydrophilic property which carries out distributed content is dissolved into the 1st resin layer 2 of this lipophilic property, it reacts with this basic agent, and discoloration is produced.
[0055] Moreover, since [to which the water wetting judging sheet of this invention carried out the laminating of the 1st resin layer 2 of lipophilic property, and the 2nd resin layer 3 of a hydrophilic property to this order on the base-material sheet 1] it has bilayer composition at least, With the water adhering to the sheet front face, the 2nd resin layer 3 of the hydrophilic property first shown in a sheet front face dissolves easily with an acid-base indicator. Then, the discoloration operation by the color reaction produced when the basic powdered material or acid powdered material contained in the 1st resin layer 2 of lower layer lipophilic property dissolves, The 2nd resin layer 3 and acid-base indicator of a hydrophilic property which dissolved easily and were fluidized with the water adhering to the sheet front face A fluidization ablation operation of the 2nd resin layer 3 which produces the 1st resin layer 2 of lipophilic property to the 1st resin layer 2 by permeating, being hard to permeate the base-material sheet 1 side quickly, and holding only the time of the grade which it is on the 1st resin layer 2 is obtained.
[0056] Thus, after the portion which did not have ablation ****** among the 2nd resin layers 3 of the hydrophilic property which discolored according to color reaction and carried out fluidization ablation on the 1st resin layer 2 of lipophilic property serves as an irregular blot, and remains on the 1st resin layer 2 and the 2nd resin layer 3 dries, it leaves the water wetting trace of visibility on the 1st resin layer 2.
[0057] Moreover, it is held on the base-material sheet 1 as it is, without fluidizing, even if the water wetting judging sheet of this invention carries out water wetting of the aforementioned 1st resin layer 2 of lipophilic property. In case the acid-base indicator in the 2nd resin layer 3 of the hydrophilic property of the top dissolves by water wetting and it fluidizes on the 1st resin layer 2, the state where the alkaline agent or the acid agent currently mixed by this 1st resin layer 2 surface section, and color reaction tend to advance is acquired.
[0058] Moreover, even if it is hard to produce a blot and discoloration simply in the spontaneous slight dew condensation grade inside the product by change of the humidity of the open air, or temperature etc. and a judgment sheet gets dry, the water wetting judging sheet of this invention can hold the trace of discoloration, and does not have with-time change of discoloration by water wetting.
[0059]
[Effect of the Invention] The water wetting judging sheet of this invention is what is attached in a product which requires consideration to water wetting, such as an electric product. For example, it is what that uses, attaching in the interior of a product (the covering case inside of a product, the electric wiring section, an electrical circuit substrate inside a product, etc.), or sticking. Do not discolor in slight water wetting about [by the climatic change, temperature-and-humidity change of the open air etc. / spontaneous] dew condensation, but water infiltrates into the interior of a product irrespective of quantity by water wetting of a product, being immersed, submersion, etc. When the interior of a product gets wet, discoloration is produced, the discoloration state can be maintained after judgment sheet dryness, and it is effective as water wetting judging sheets, such as an objective judgment label about the existence of generating of water wetting, such as an electric product, and a seal.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] A sectional side elevation [in / one example of the water wetting judging sheet of this invention / in (a)] and (b) are the sectional side elevations in other examples which formed the 2nd resin layer of the water wetting judging sheet of this invention in the shape of a pattern.
[Description of Notations]
1 -- Base-material sheet 2 -- The 1st resin layer of lipophilic property 2a -- Lipophilic property synthetic resin
2b -- Basicity or acid powdered material 3 -- The 2nd resin layer of a hydrophilic property 3a -- Hydrophilic synthetic resin
3b -- Acid-base indicator 4 -- Surface-protection layer

DRAWINGS

[Drawing 1]